



# Groundwater Reduction Plan Participant Meeting October 21, 2015





# 2015 Participant Meeting

- **Introductions**
- **FB Subsidence District Update**
- **GRP Implementation**
- **GRP Financial Update**
- **Questions & Answers**

# Fort Bend Subsidence District

**Mike Turco, General Manager**

**Robert Thompson, Deputy General Manager**

# 2013 Regulatory Plan Key Elements

## Regulatory Areas & Conversion Requirements

### Area A

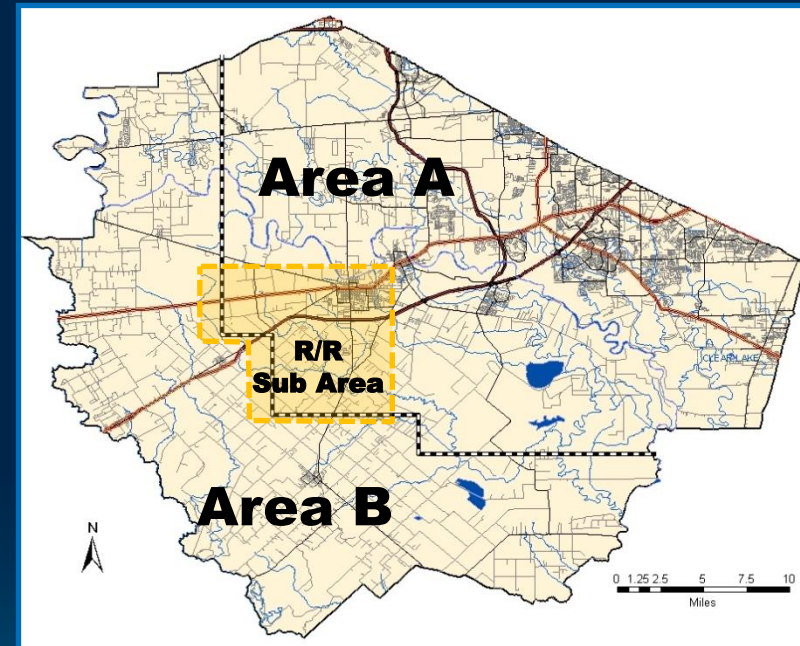
**Reduce GW pumpage by 30% by 2014**

Reduce GW pumpage by 60% by 2025

Exemptions: Ag. Irrigation, Livestock, and  
TWD  $\leq$  10.0 MGY until alternate water is  
available

Richmond/Rosenberg Sub-Area:  
Reduce GW pumpage by 30% by 2016

Disincentive Fee currently set in 2013 at \$6.50  
per 1000 gallons



Area B - No scheduled groundwater reductions at this time

FBSD will evaluate need for reduction requirements in future

Cannot transfer GW to Area A unless use dates back to before Sept. 24, 2003



# Important Changes

**There have been no changes to the District Plan since it was adopted in 2013.**

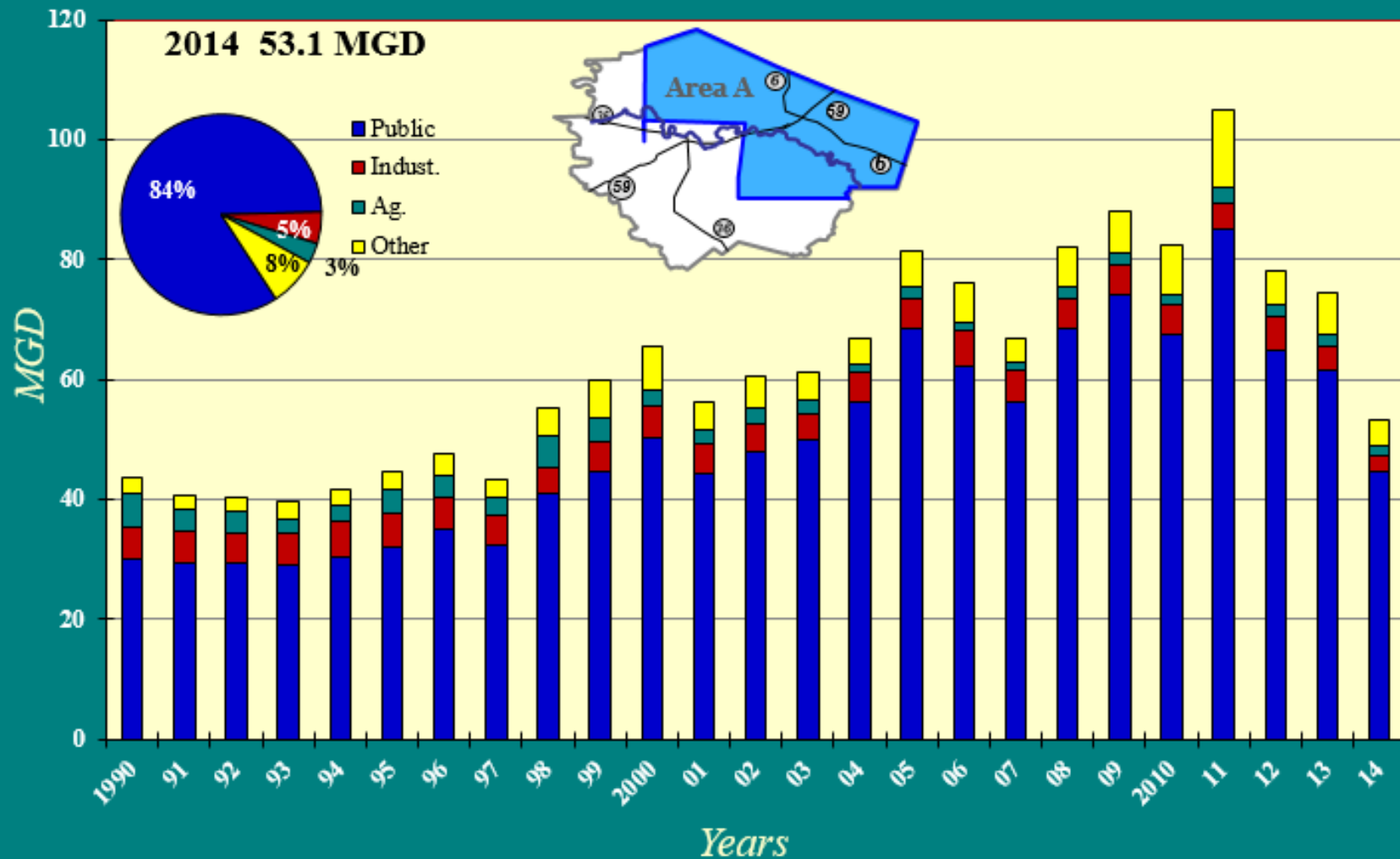
**However, the FBSD Board adopted new Rules on July 22, 2015. There were three significant changes.**

- 1. The one small-well exemption has been removed.**
- 2. New wells for houses and/or irrigation for houses require permits if other water is available.**
- 3. All wells are now required to be metered.**



# Groundwater Withdrawals

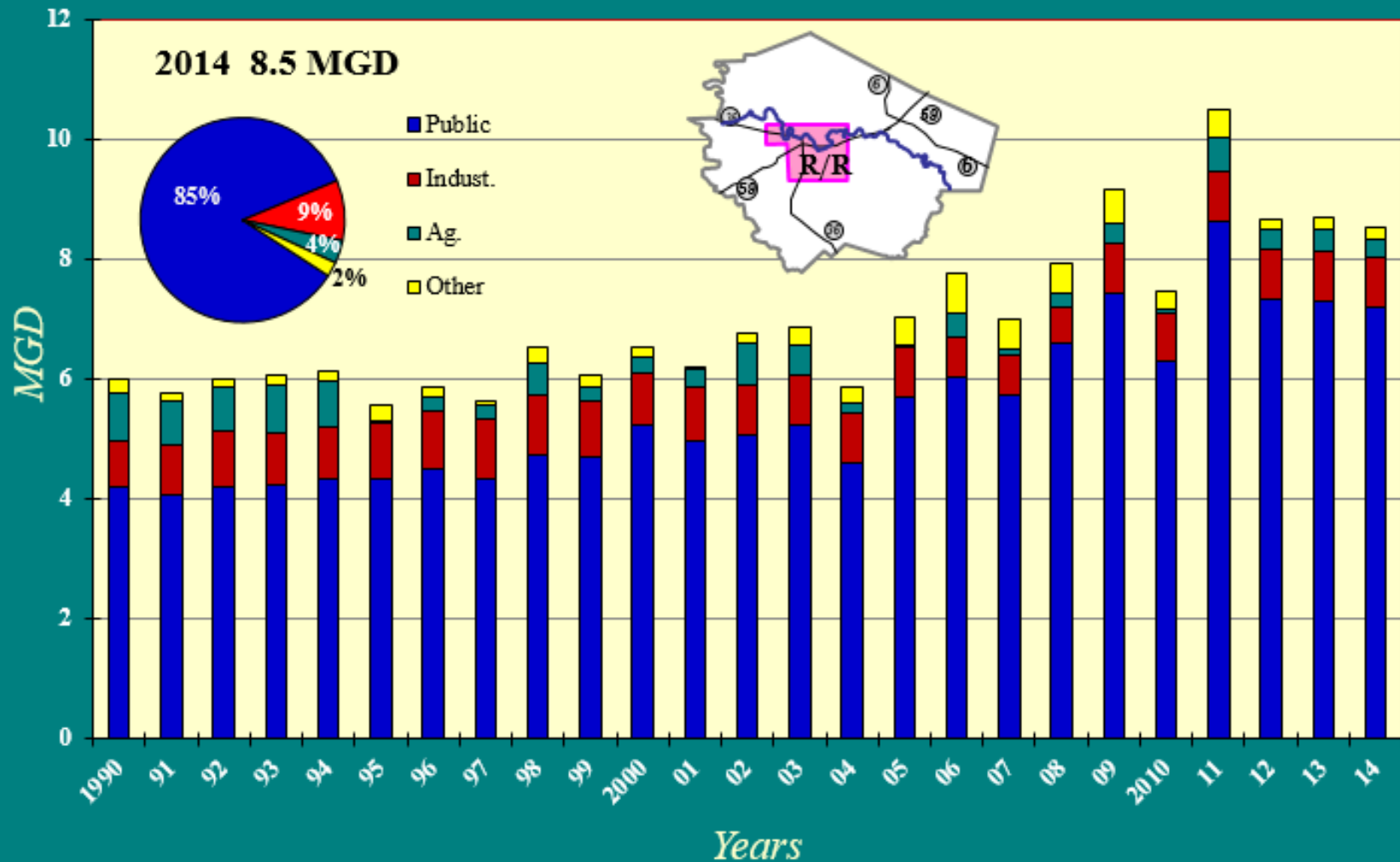
## Grouped by Use - Regulatory Area A





# Groundwater Withdrawals

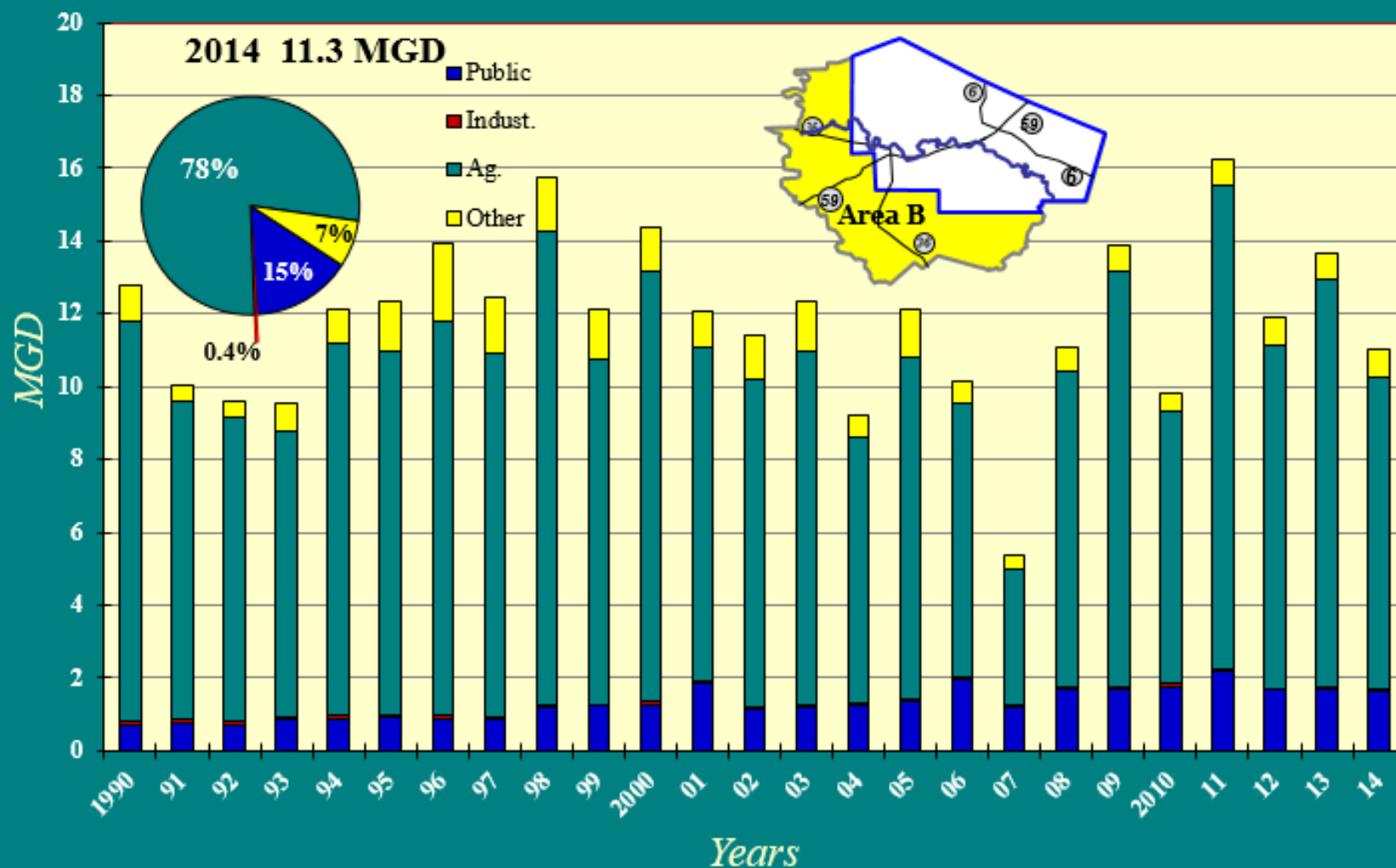
Grouped By Use - Sub-Area R/R





# Groundwater Withdrawals

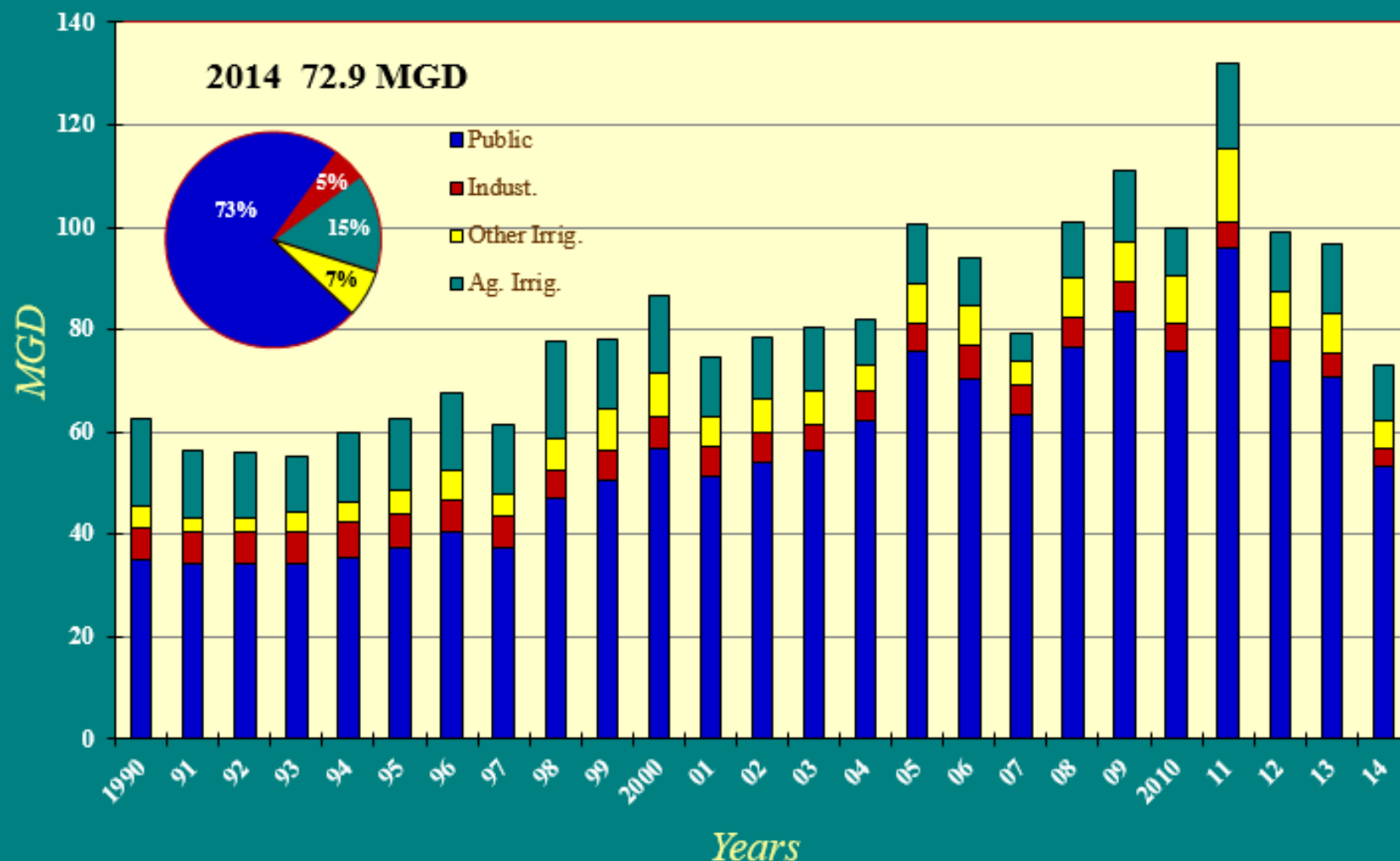
Grouped by Use - Regulatory Area B



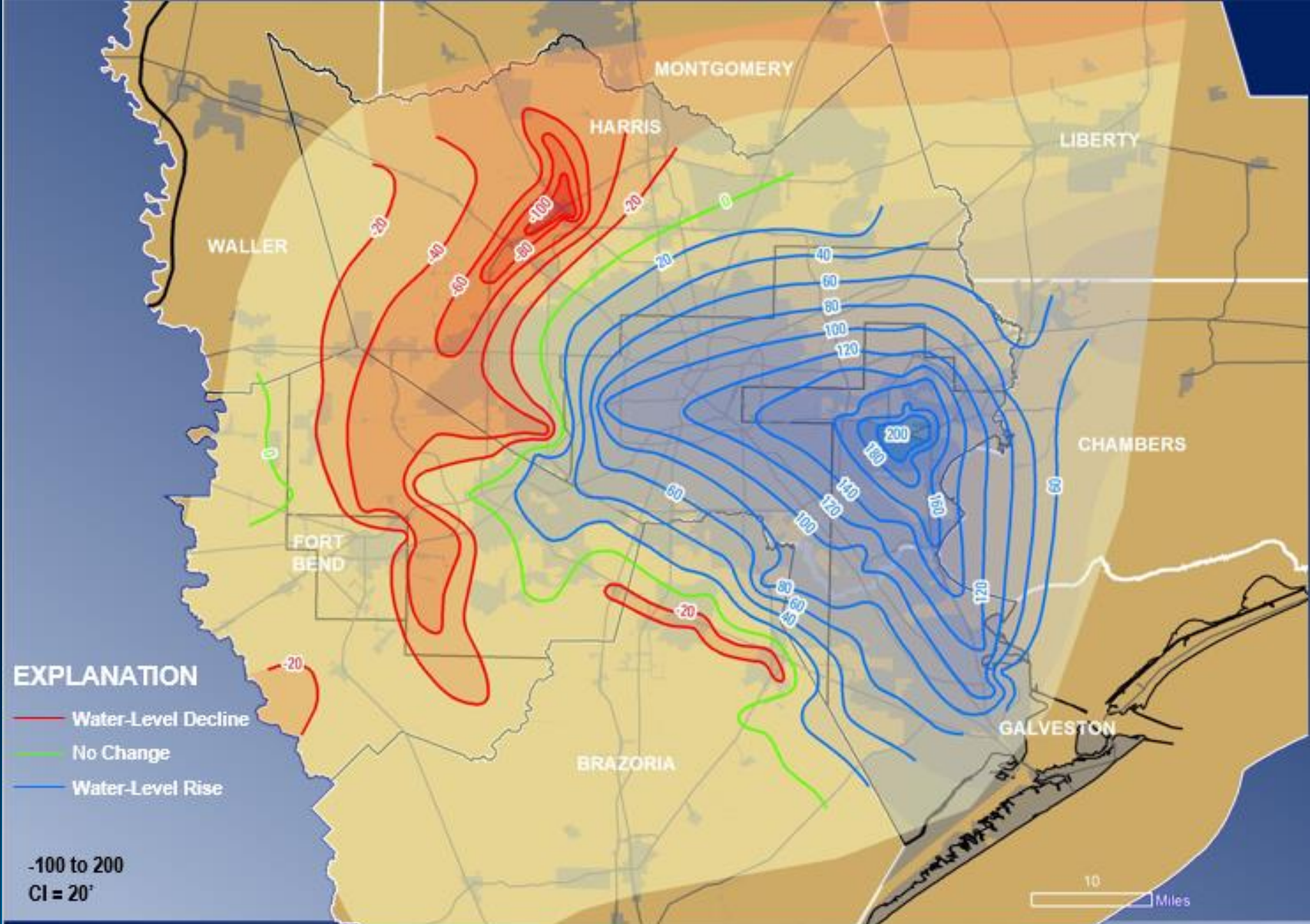


# Groundwater Withdrawals

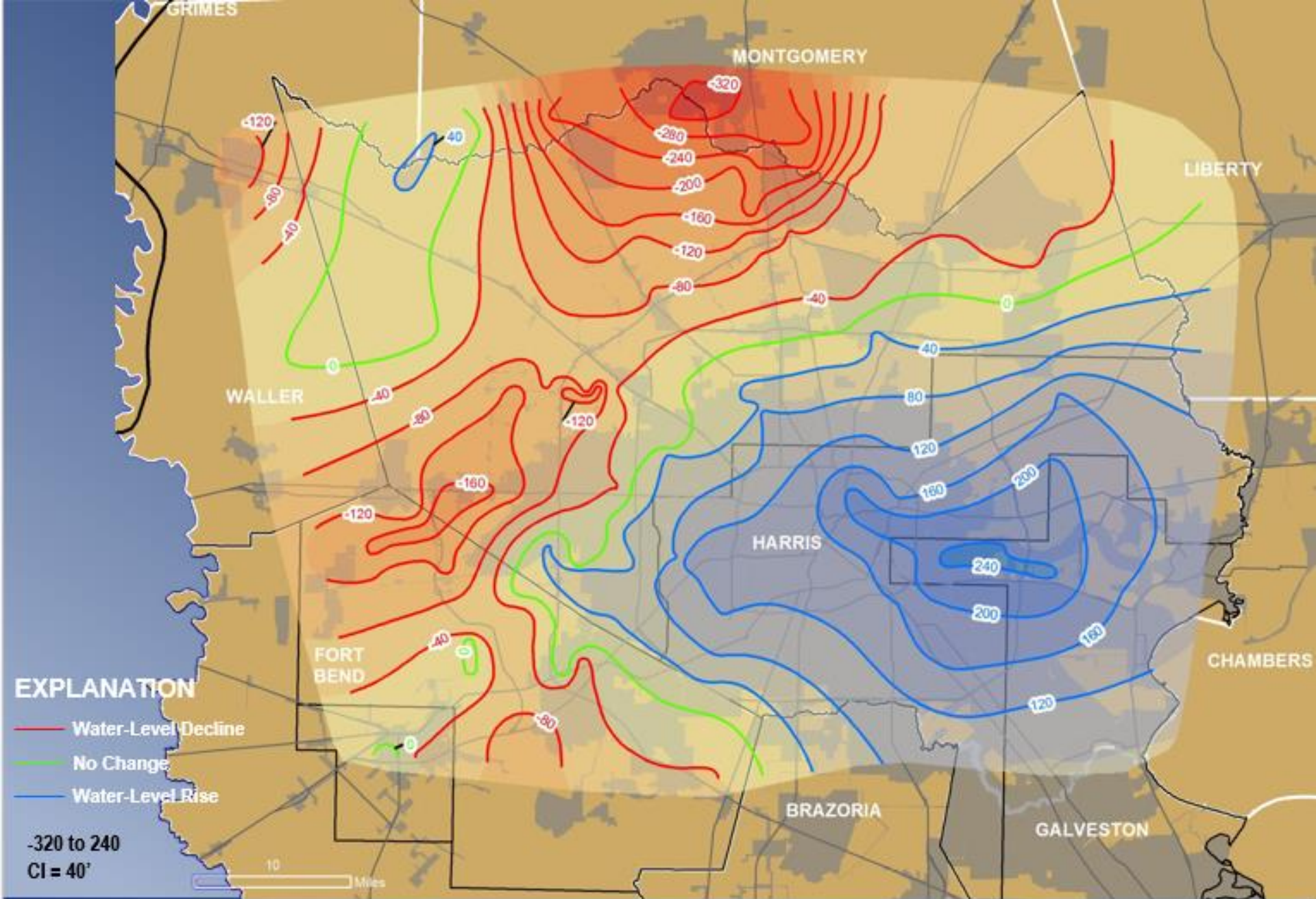
Grouped By Use - Entire District

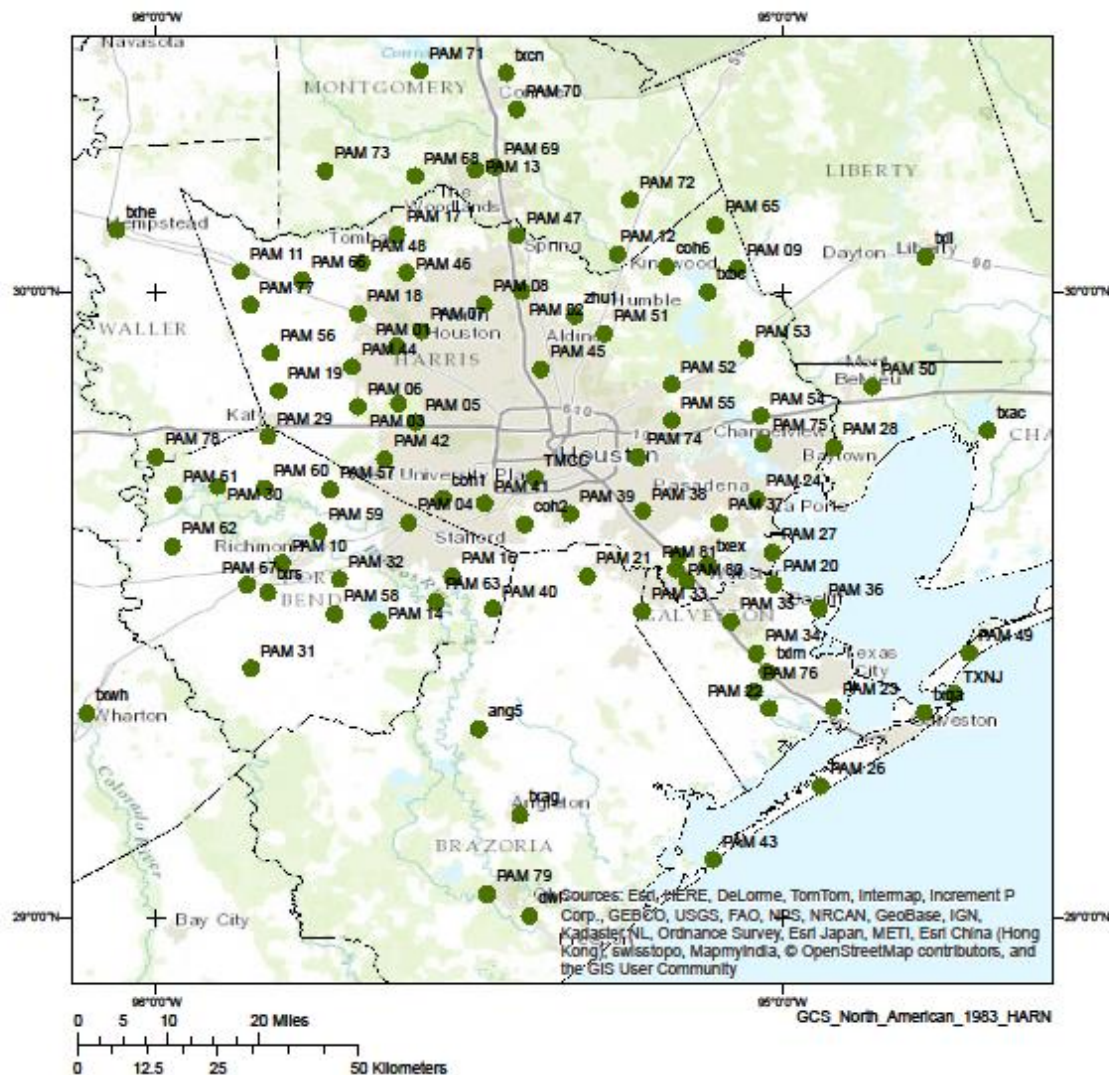












## EXPLANATION

● GPS sites

Observed (GPS) monitoring sites near Houston, TX

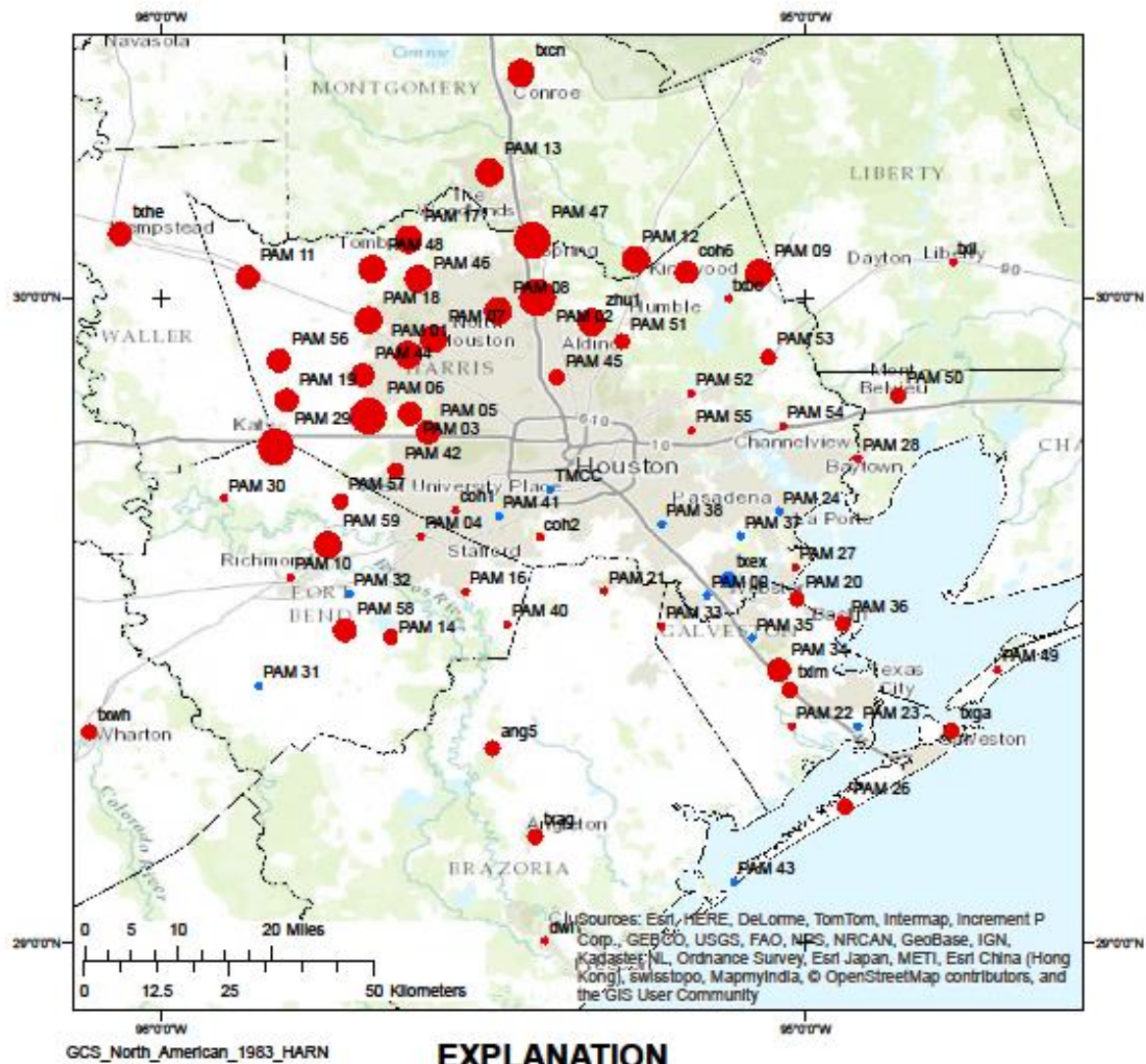




### EXPLANATION

### Ellipsoid height change 2013-2014

- 0.057 - 0.228 (Feet)  
0.006 - 0.058  
-0.044 - 0.007  
-0.0952 - -0.045  
-0.146 - -0.0953  
-0.177 - -0.147

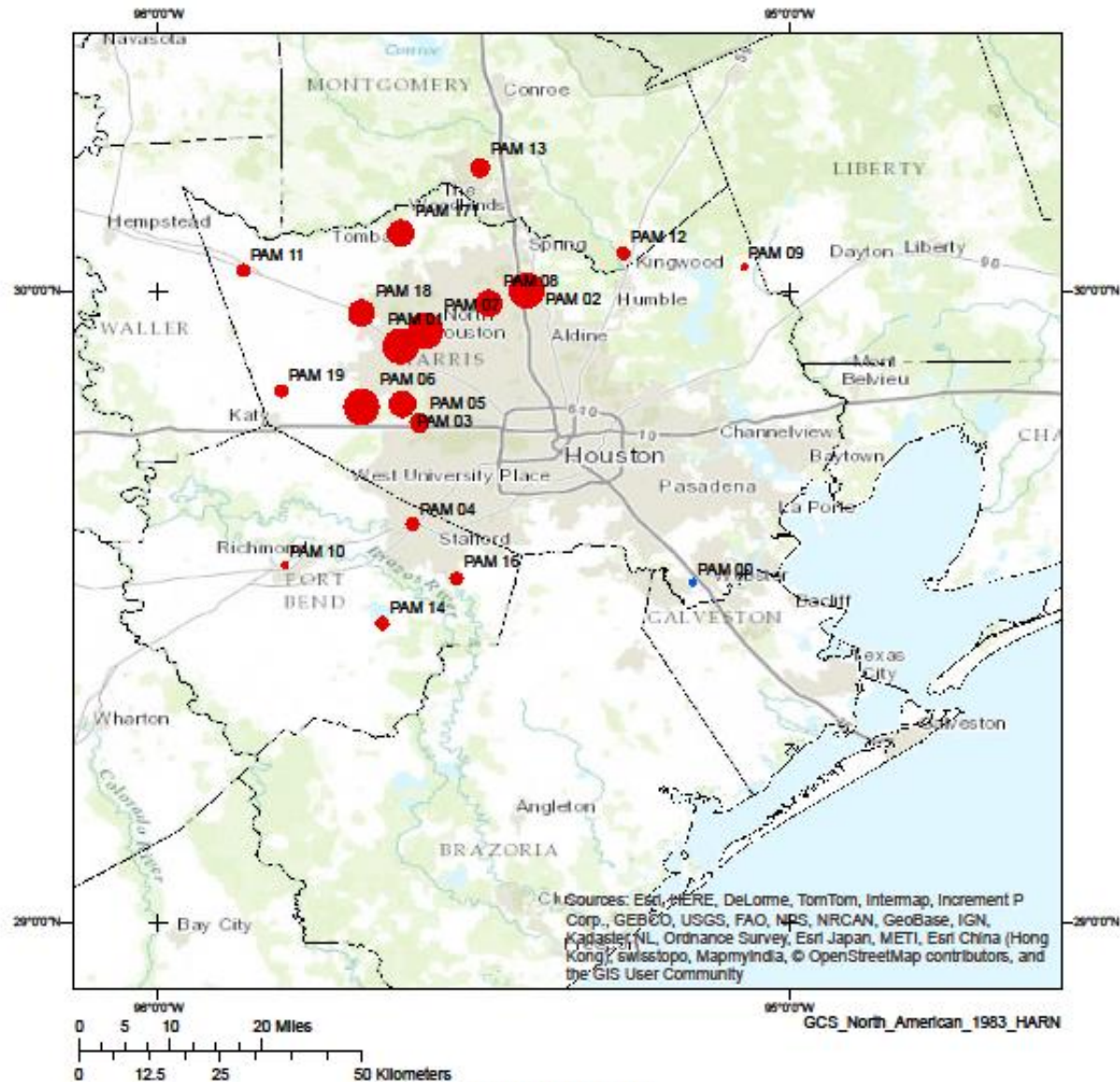


## EXPLANATION

Ellipsoid height change 2010-2014

- 0.120896 - 0.283215 (Feet)
- 0.022413 - 0.120895
- -0.046462 - 0.022412
- -0.101119 - -0.046463
- -0.148246 - -0.101120
- -0.273265 - -0.148247
- -0.339011 - -0.273266





### EXPLANATION

Ellipsoid height change 2000-2014

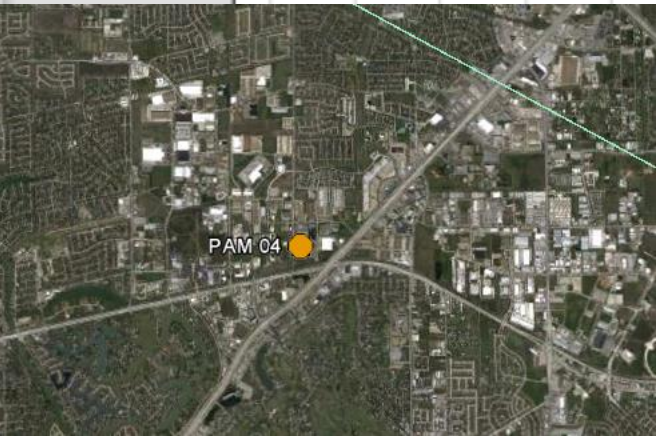
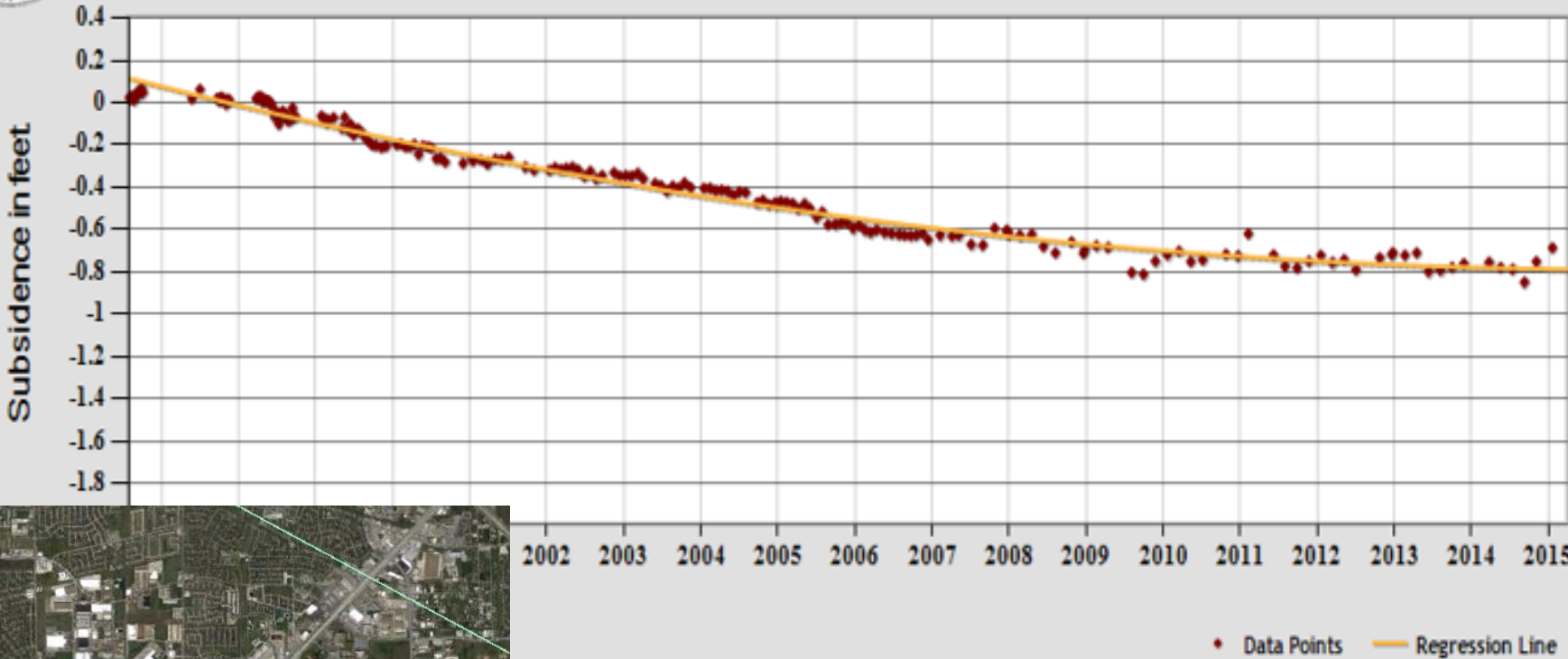
- -0.0 - 0.01 (Feet)
- -0.24 - -0.01
- -0.49 - -0.25
- -0.74 - -0.5
- -0.99 - -0.75
- -1.25 - -1.00

# FBSD Subsidence Monitor Site – PAM 04 – Sugar Land

## Fort Bend Subsidence District - PAM 04



### *Subsidence Observations*



# Subsidence Change Table

PAM Sites		First	Subsidence (feet)	
ID	Location	Observation	2014	Cumulative
04	<a href="#">Sugar Land (FB)</a>	8/2/1996	-0.05	-0.76
10	<a href="#">Rosenberg (FB)</a>	1/15/1999	-0.06	-0.20
14	<a href="#">Smithers' Lake (FB)</a>	11/17/2000	-0.10	-0.28
16	<a href="#">Kitty Hollow Park (FB)</a>	11/9/2000	-0.03	-0.30
21	<a href="#">Pearland (B)</a>	1/30/2002	-0.04	-0.13
29	<a href="#">Katy (FB)</a>	4/28/2007	-0.10	-0.43
30	<a href="#">Fulshear (FB)</a>	5/8/2007	-0.03	-0.03
31	<a href="#">Needville (FB)</a>	5/8/2007	0.02	0.08
32	<a href="#">Greatwood (FB)</a>	5/8/2007	-0.05	0.02
40	<a href="#">Arcola (FB)</a>	5/8/2007	-0.06	-0.17
41	<a href="#">610 Loop Southwest (H)</a>	6/27/2007	-0.01	0.04
42	<a href="#">Highway 6 at Bissonnet Road (H)</a>	7/5/2007	-0.04	-0.11
57	<a href="#">South Cinco Ranch (FB)</a>	2/19/2009	0.02	-0.10
58	<a href="#">George Ranch (FB)</a>	8/4/2010	-0.08	-0.08
59	<a href="#">Pecan Grove (FB)</a>	7/28/2010	-0.06	-0.06
60	<a href="#">Fulshear at Gaston Road (FB)</a>	2/8/2013	0.02	-0.02
61	<a href="#">Simonton (FB)</a>	2/16/2011	-0.07	-0.05
62	<a href="#">Orchard (FB)</a>	2/16/2011	-0.06	0.03
63	<a href="#">Missouri City at Brazos River Pump Inlet (FB)</a>	6/7/2011	-0.06	0.00
67	<a href="#">Rosenberg at Interstate 69 (FB)</a>	2/9/2011	-0.04	-0.03

Cooperative CORS Sites		First	Subsidence (feet)	
ID	Location	Observation	2014	Cumulative
ANG5	<a href="#">US Coast Guard – Angleton (B)</a>	1/1/2008	-0.01	-0.12
COH1	<a href="#">City of Houston – Southwest (H)</a>	1/24/2007	0.03	-0.05
COH2	<a href="#">City of Houston – South (H)</a>	1/24/2007	0.04	-0.04
DWI1	<a href="#">SMRTNT – Clute (B)</a>	8/27/2009	0.01	-3.70
TXAG	<a href="#">TxDoT – Angleton (B)</a>	1/23/2007	-0.01	-0.07
TXHE	<a href="#">TxDoT – Hempstead (W)</a>	1/23/2007	0.06	-0.12
TXRS	<a href="#">TxDoT – Rosenberg (FB)</a>	5/15/2011	0.01	0.00
TXWH	<a href="#">TxDoT – Wharton (WH)</a>	3/27/2010	0.15	0.17



# Groundwater Reduction Plan Implementation Update

**Robert Valenzuela, P.E.**  
**Director of Public Works**

# GRP Participants

## Public Water Systems

- FB MUD 106 (Greatwood)
- FB MUD 112 (New Territory)
- Plantation MUD (Tara Plantation)
- Tx Dept of Criminal Justice
- Royal Valley Utilities
- City of Sugar Land

## Private Businesses

- Texas Par Golf
- River Pointe Golf
- WSG Sweetwater
- Schlumberger

## Home Owner Assoc & Levee Dist

- Royal Lakes Estates HOA
- Avalon CAI
- Sugar Mill CAI
- Sugar Lakes HOA
- First Colony Comm Association
- New Territory Res. Comm Assoc.
- River Park HOA
- LID 17 (Telfair Levee Dist.)



# GRP Water Demand

Million Gallons per Day (MGD) Average Day

<i>FBSD Year</i>	<i>Demand</i>	<i>Conversion</i>	
		<i>Actual</i>	<i>Required</i>
<b>2009-10</b>	<b>24.22</b>	<b>1.17</b>	
<b>2010-11</b>	<b>25.43</b>	<b>1.20</b>	
<b>2011-12</b>	<b>30.37</b>	<b>1.29</b>	
<b>2012-13</b>	<b>24.70</b>	<b>0.67</b>	
<b>2013-14</b>	<b>25.03</b>	<b>3.38</b>	
<b>2014-15</b>	<b>22.68</b>	<b>9.39</b>	<b>6.75 30%</b>
<b>2024</b>	<b>34.56</b>		<b>10.37 30%</b>
<b>2025</b>	<b>34.58</b>		<b>20.75 60%</b>
<b>Ultimate</b>	<b>36.45</b>		<b>21.87 60%</b>

# GRP Water Supply

## ➤ Raw Surface Water

- GRP long term conversion requirements:
  - 9 MGD in 2014, 22 MGD in 2025
- Current Sources
  - Oyster Creek Water Right
  - Gulf Coast Water Authority
  - Brazos River Authority

## ➤ Reclaimed Water from WWTPs

## ➤ Groundwater

- Wells will supplement peak demands

# Raw Water Supply

## ➤ Oyster Creek Water Right

- 16.3 MGD (on paper)
- During drought City will limit use to 4.89 MGD per Settlement Agreement with Gulf Coast Water Authority (GCWA)

# Raw Water Supply

## Gulf Coast Water Authority

### ➤ GCWA Water Supply Agreement:

- 10 MGD Take @ \$192.47 per million/day
  - Increase from \$141.82 per million/day
- 10 MGD Option @ \$ 38.49 per million / day
  - Increase from \$23.69 per million/day

# Raw Water Supply

## Brazos River Authority (BRA)

- 6,388 acre feet
- Stored Reservoir Water
- Considered backup water for times of drought
- Rate Increase from \$69.50 to \$70.50 /ac-ft



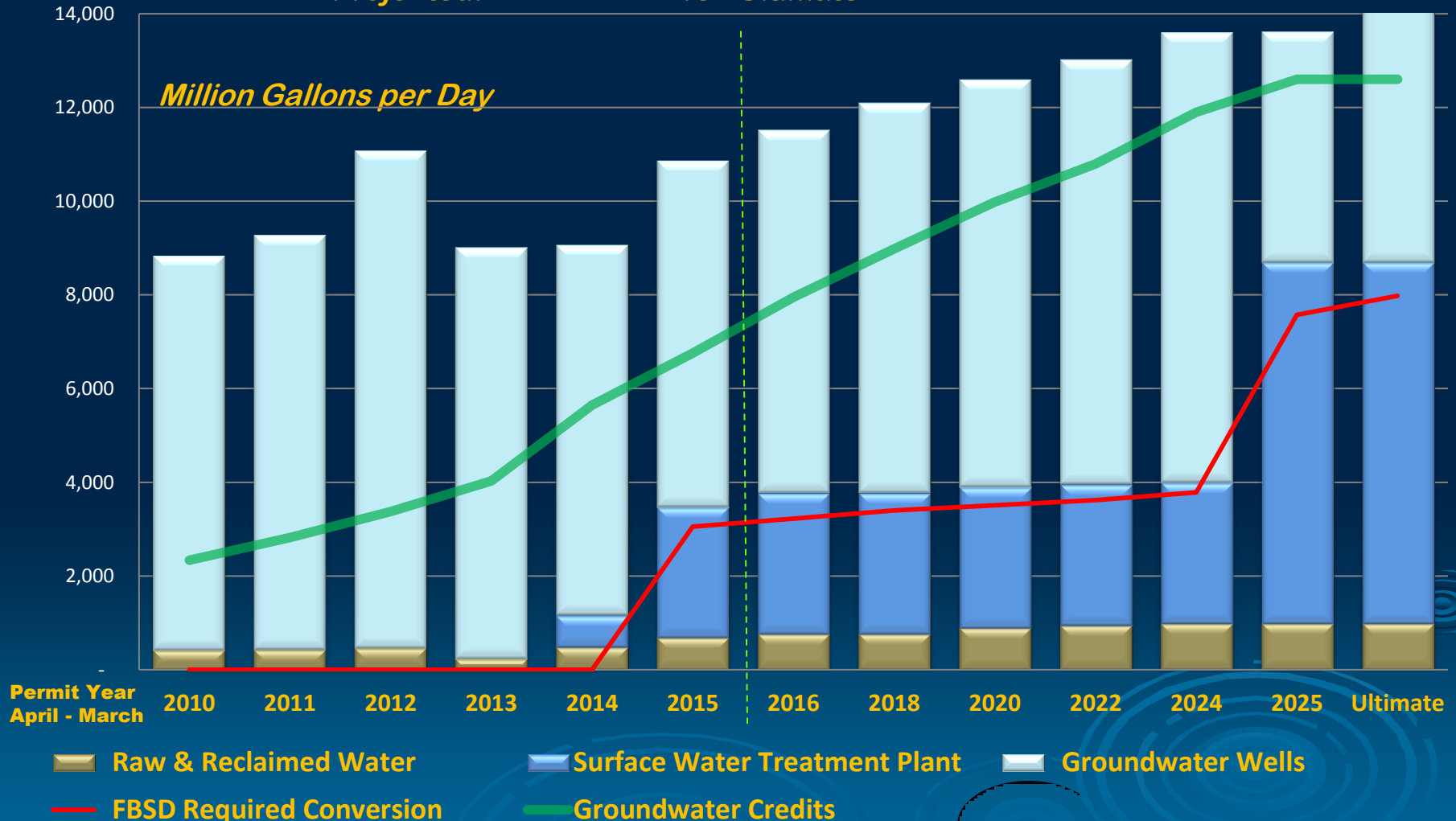
# GRP Implementation Strategy

## Four Implementation Strategies

1. **Surface Water Treatment Plant**
  - 9 MGD until 2025 expansion to 20 MGD
2. **Raw Surface Water Pump Stations**
  - GRP assumes 2 MGD
3. **Water Reuse / Reclaimed**
  - WMP Projections assume 4 MGD
  - South WWTP
  - New Territory (West) WWTP
  - North WWTP
4. **Water Conservation**

# GRP Conversion & Projection

*Actual Pumpage: 2010 – 2015 FBSD Permit Year*  
*Projected: 2015 - Ultimate*



Source Data: 2012 Water Master Plan & GRP Production; Projection assumes max. 3 MGD Raw & Reclaimed Production

# GRP Implementation Strategy

## 1. Surface Water Treatment Plant

- Operational and Online November 2013
  - 9 MGD - Re-rated to 10.85 MGD
  - Expand to 20 MGD in 2025
- Over convert dense areas (City Potable Utility) – minimize transmission lines
  - Surface water delivered to groundwater plants for distribution and blending to minimize changes in taste
  - Peak water demands met from groundwater

# SWTP Implementation Strategy

## Transmission Lines

### Completed Projects

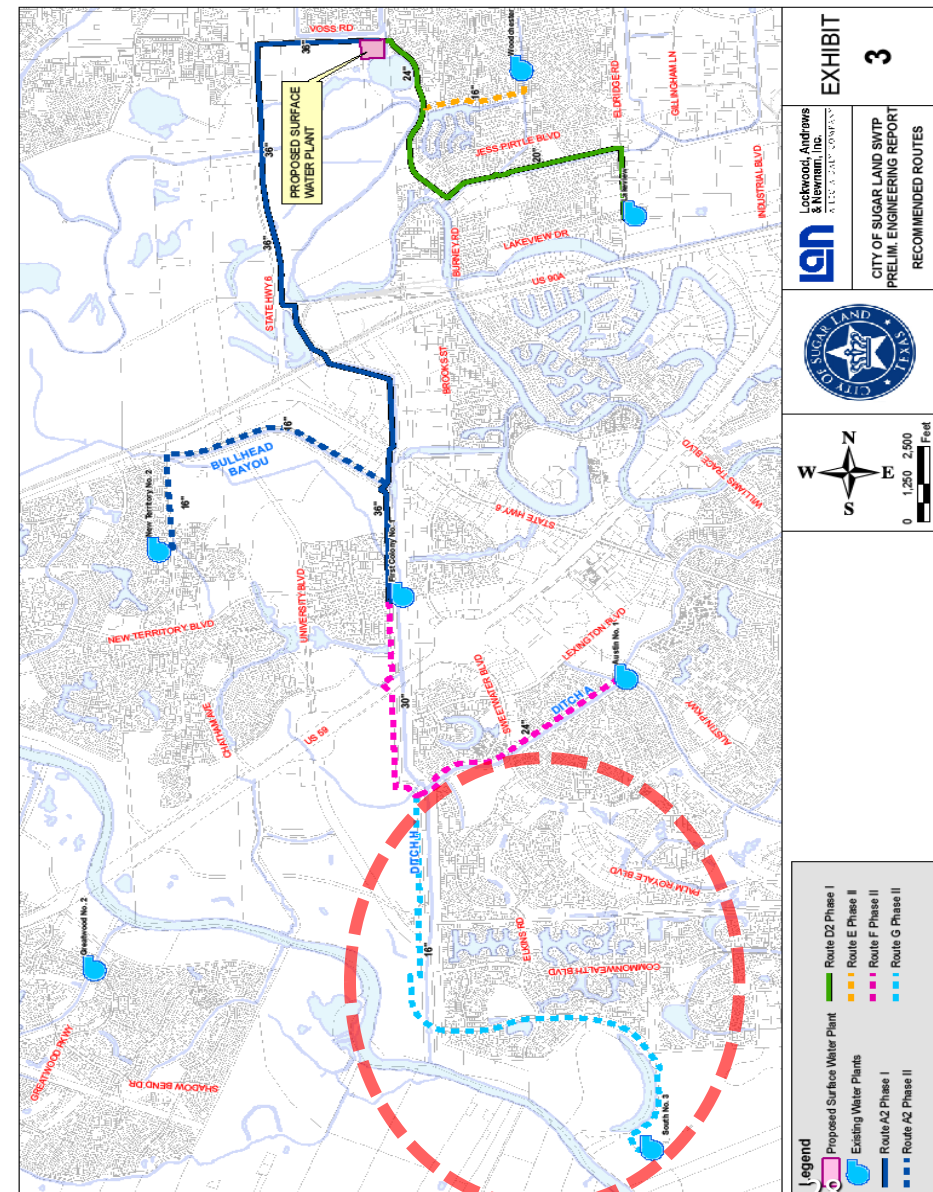
- Lakeview WP line
- First Colony WP line

### Current Project

- Riverstone

### Future Project

- Austin Parkway
- New Territory



# GRP Implementation Strategy

## 2. Raw Surface Water Pump Stations

- Lake Pointe Irrigation
- Telfair Lake Filling
- Venetian Estates Lake Filling and Irrigation
- Orchard Irrigation
- Sugar Lakes Pump Station

## 3. Water Reuse /Reclaimed

- **South WWTP - *online September 2015***
- New Territory (West) WWTP
- North WWTP

## 4. Water Conservation



# Water Conservation

## ➤ Goal:

- Reduce “wasteful” outdoor use
- Reduce peak demands
- Partnership & Education;  
*Not* Restriction & Regulation



- Residential Irrigation System Evaluations
  - *Free* to Residents in the GRP Planning Area

# Groundwater Credits Earned

## 1. Early Conversion

- Raw Water Projects
- Surface Water Treatment Plant (Nov.-Mar.)

## 2. Over Conversion

## 3. WaterWise Conservation Education

- Presentations to 4<sup>th</sup> - 5<sup>th</sup> Graders

### ➤ Total Credits as of March 2015:

**6.7 billion gal = 30% conversion for 1.7 years**

### ➤ Value: Disincentive Fee \$ 6.50/1000 gal = \$43,913,571



# GRP Projects

## *Completed*

- Reclaimed Plant at South WWTP
  - Irrigation and Lake Fill to Riverstone Development

## *New*

- Surface Water Transmission to Riverstone Water Plant
- Integrated Water Resource Management Plan

# Reclaimed Plant at South WWTP





San Antonio Area Council, Texas General Land Office, Texas Orthoimagery Program, U.S. Geological Survey

**Reclaimed  
Plant**

**South Wastewater  
Treatment Plant**

**Scenic River Drive**





# **Financial Update**

**Jennifer Brown**  
**Director of Finance**

# GRP Philosophy

- **City Policy adopted in September 2002**
  - **We will Plan for the City and our ETJ.**
- **Separate GRP Fund Created, contains all Costs/Expenditures**
- **Costs of Surface Water Conversion Shared Equally among GRP Members**
- **Blended Rate for all Members**
- **All Participants Pay Based on Same Rates**
- **GRP Participants avoid disincentive fee of \$6.50 per 1,000 gallons**

# Financial Capacity

- **Operations Funded in the Surface Water Fund**
  - **Enterprise Fund Separate from Water Utilities**
  - **Only Accounts for Surface Water Activities**
- **City sold 2011 CO's backed by GRP fees**
  - **More cost effective than revenue bonds**
  - **GRP Benefits from City's AAA bond rating**
  - **No bond coverage requirement**
- **No increase in GRP Rate anticipated for at least next 5 years**

# Surface Water Fund

- **FY14 Begin SWTP Plant Operations Mid November**
- **Final GRP Rate Increase Implemented Jan 2014**
- **Plant Transitioned to Full City Operations in Summer 2014**



# What Can Impact Rates

- FBSD Regulations
- Future Expansions
- Dramatic Changes in Pumpage
  - Rainfall- High or Low

# Surface Water Fund

## Prior Year Operating Results

	Revenues	Expenses	Net	GRP Rate
FY 08	\$4,864,709	\$2,636,519	\$2,228,190	\$0.25
FY 09	2,487,817	1,345,424	1,142,393	0.25
FY 10	4,379,854	1,984,577	2,395,278	0.60
FY 11	106,376,359	101,363,160	5,013,199	0.70
FY 12	9,996,039	10,320,727	-324,688	1.32
FY 13	13,149,299	7,047,527	6,101,772	1.50
FY14	13,473,739	14,396,372	-922,634	1.75

# Prior Year

## Capital Improvement Projects

Project Name	Funding
Newland Water Connection	443,732
Oyster Creek Raw Water Use	7,000
Non-Potable Water/ Pump Stations	350,640
Assets Purchased - WCID#1	49,561
Surf Wtr Transmission Ln	16,877,108
Surf Wtr Treatment Plant	81,873,111
Water Plant Upgrades	8,091,123

**Continued...**

# Prior Year Capital Improvement Projects

Project Name	Funding
SCADA Comm. Conversion	385,000
SWTP OM Manual and SOP	417,830
SWTP Computerized Main.	500,000
SWTP CT Study/Tracer Test	75,000
SWTP Raw Monitoring Syst.	29,000
SWTP Membrane & LRV Test	155,000
Brooks Lake Wier/AMIL Gates	2,204,600
Dam 3 Flood Control Impr	90,000
<b>Total</b>	<b>\$ 111,548,705</b>

# Surface Water Fund

## FY15 Estimates

Millions (\$)		FY15B		FY15E		Variance
Revenues	\$	15.87	\$	13.31	\$	-2.56
Expenses		15.05		15.05		-
Net Income		0.82		-1.74		-2.56



# Surface Water Fund

## 5 Year Forecast

\$ Millions	FY16	FY17	FY18	FY19	FY20
Revenues	15.39	15.62	17.35	17.42	15.97
Expenses	15.35	15.16	14.89	15.19	15.53
Net Income	0.04	0.46	2.46	2.23	0.44
End Balance	9.96	10.42	12.89	15.12	15.56

# F16-20 Capital Projects

Project Name	FY16	FY17
Brooks Lake Weir / AMIL Gate Repl	\$ 1,785,400	
Riverstone Water Plant Improvements	650,000	\$ 5,300,000
Riverstone Water Plant Connections	1,200,000	8,450,000
<b>Total</b>	<b>\$ 3,635,400</b>	<b>\$ 13,750,000</b>

# Surface Water Comparative GRP Fees

Per 1,000 Gallons As of January 1, 2015	GRP Fee	Surface Water Fee
Sugar Land	1.75	1.88
Comparative Rates:		
Missouri City	1.65	
West Harris County Water Authority	1.90	2.30
North Fort Bend Water Authority	2.45	2.80

# Questions?





## Surface Water Treatment Plant

